fully removed its external and internal coverings. He then pulled it to and fro with a continuous jerking motion, in imitation of the systole and diastole of the artery, for the space of about a minute. Immediately on discontinuing this movement, he placed it upon the bulb of a thermometer, and had the satisfaction of noticing, after the lapse of two minutes, that the mercury had risen as many degrees. On removing the thermometer, the heat diminished rapidly. To be certain that the increment of heat was not derived from any source other than that in question, he took the precaution of covering his fingers with a double layer of flannel, to prevent the communication of heat from the body. He also covered his mouth with a handkerchief, to guard against the warm breath affecting the thermometer while watching the progress of the experiment. It may also be right to state that the experiment was performed in a room without a fire, the temperature of the air being 55°. There were several difficulties to contend with during the investigation. The chief impediment appeared to be the moisture of the artery, which, by its evaporation, had a tendency to carry off a portion of the heat. However, by carefully drying the artery with a cloth, he succeeded in obviating this difficulty to a considerable extent, and was enabled to perform the experiment twice consecutively in a satisfactory manner. He had also, within the last fortnight, repeated the experiment in the presence of a medical friend, with an equally satisfactory result. His attention was often arrested, while conducting the experiments, by other mechanical analogies between caoutchouc and the elastic coat of arteries. Like the former, the latter could be elongated to twice its ordinary length, and, on suddenly stopping the tension, would return to its usual dimensions with considerable force and a snapping noise. Physiologists, after having clearly proved that a great portion of animal heat is the result of chemical changes in the blood, yet confessed that a residuum of heat is not to be referred to this source. This residuum, he considered, arises from the mechanical action of the arteries. It would be exceedingly difficult to determine the precise quantity of heat given off during each beat of the artery; but if we admit the development of only a very small quantity, it necessarily follows, from the circumstance of the action of the arteries being in incessant operation during life, that the heat must quickly accumulate to a great extent; and it is even probable that the body, unless cooled by the functions of the skin and lungs, would, in a short space of time, become preternaturally hot. The following physiological and pathological facts appear to corroborate the views he had taken as to the mechanical source of heat: 1. The minute distribution of the arteries to every part of the system insures a general and equal distribution of heat. 2. The rigidity of the arteries in old age is a probable cause of the diminution of animal heat at the close of life. 3. The increased warmth of the body after exercise seems to be readily explicable upon the principle of increased force of the arteries. 4. In many diseases of the lungs, where their functions are at fault, and at a time when the arteries are beating with great strength and velocity, the heat of the body is found to be above the usual standard. 5. Medicines which diminish the action of the heart and arteries almost invariably reduce the temperature of the body. 6. The heat of local inflammation, in cases where the constitution does not sympathize to any extent, cannot be satisfactorily referred to any other source, as the arteries immediately in the neighbourhood of the affected part are throbbing violently, when the capillaries (which are supposed to play so large a share in the chemical theory) are generally considered to have their action impeded. Dr. Crisp has hinted that many cold-blooded animals are remarkable for the great elasticity of their arteries. This fact could not affect his theory. The languor of the circulation in this class of animals more than counterbalances any calefactory effect which might otherwise be produced by the resiliency of their arterial structure.—*Med. Times and Gaz.* May 27, 1854.

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7. *Starch in the Brain.*—In our previous number, p. 466, we gave an account of the discovery by Purkinje and Virchow of starch globules in the human nervous centres. Mr. Busk states (*Microscopic Journal*, number 6) that he has satisfied himself of the structural and chemical identity of these bodies with

starch. He found these "corpora amylacea" in vast numbers in and on many parts of the brain (as on the septum lucidum, for example), in a patient who had died of cholera; and the cerebral substance in immediate contiguity with them appeared quite natural.

In the corpora striata he could find few or no starch grains, but an appearance presented itself which seemed to him to be connected with their formation. Many particles of sabulous matter were met with, which were lodged in irregular masses of what appeared a fibrinous or immature connective tissue substauce; and, upon the addition of iodine, each mass of crystals was found to be immediately surrounded by an irregular thickness of a transparent matter, which was turned, not *blue*, but a light *purplish pink* by that reagent—a substance, in fact, closely resembling in that respect the very early condition of the cellulose wall.

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8. *On the Relation that Fat bears to the Presence of Sugar in the Livers of the Mammalia and Birds.*—Dr. Gibb, in a paper read before the Physiological Section of the Medical Society of London (April 10, 1854), drew the attention of the Society to the bearing which the amount of fat in the livers of man and animals, and birds, possesses in relation to the presence of sugar in that organ, which may hereafter lead to some important deductions with reference to its pathology in connection with saccharine assimilation. From a series of experiments which he had performed upon the livers of birds and some of the mammalia, from 1849 to 1852, with the original object of estimating the quantity of sugar present, he found that those which possessed much fat invariably contained a larger quantity of sugar than those, again, which appeared to possess very little, if any, of that substance. Thus, among the mammalia, in dogs and sheep, whose livers possessed nothing unusual in their ordinary characters, the presence of sugar was demonstrated, but in quantity exceedingly small, as compared with that found in the seals, whose livers again were absolutely gorged with fat, and contained a very large quantity of sugar. Among birds, the livers of the palmipedes, or web-footed tribes, and the grallæ or waders, which, in most of the species, contained quantities of fat, were found to possess a much larger quantity of sugar than the livers of the gallinæ, or poultry, which were remarkable again for the absence of fat, as compared with the former. To apply this discovery to man, he instituted a comparison in regard to the quantity of sugar between healthy livers and the state termed "fatty liver," common in phthisis pulmonalis, and experiments clearly proved that the amount of sugar found in the fatty liver very much exceeded that of the normal healthy liver. These experiments were repeated with the same results on numerous occasions, with the examination also of other organs besides the liver, but which would not now be noticed. The importance which the knowledge of this fact is likely to bear, in connection with the secretion of fat and sugar by the liver, their relations to one another, and their connection with the function of respiration, cannot be over estimated. Bernard has clearly demonstrated the presence of sugar in the hepatic veins going from the liver, the iuferior vena cava, and right side of the heart; in other words, in the blood going to the lungs, but none in that returning from those organs, unmistakably showing that the saccharine element must undergo some chemical change in the lungs, as has been inferred by Magendie. He was not prepared to say what influence the presence or absence of fat may possess in relation to the secretion of sugar in the liver, but it is a fact of sufficient importance to engage the attention of physiologists iu connection with saccharine assimilation. The fact, too, of more sugar being found in the "fatty liver" of phthisis than in the healthy liver, may possibly be the result of the interference of the ordinary combustion of the lungs, owing to the arrest of function in portions of those organs, arising from the tubercular deposition. He would only just hint, at present, at a possible relationship between secondary mal-assimilation of saccharine matters and tubercle, but some further experiments are necessary before pronouncing an opinion.

Dr. Gibb has not examined the liver of diabetic patients in relation to the quantity of sugar contained in that organ.